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| 09/884,555 | 06/19/2001 | Michael de La Chapelle | 7784-000141CPB | 3348 |

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| EXAMINER | |
|---|---|
| PEREZ, ANGELICA | |
| **ART UNIT** | **PAPER NUMBER** |
| 2684 | |

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/884,555 | DE LA CHAPELLE ET AL. | |
| | Examiner | Art Unit | |
| | Angelica M. Perez | 2684 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 June 2001*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-25 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) *1-5,21-25 and 27* is/are allowed.

6)☒ Claim(s) *6-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

## DETAILED ACTION

### *Allowable Subject Matter*

Claims 1-5, 21-25 and 27 are allowed.

1. Regarding claim 1, the previous art of record teaches of a method for managing radio frequency (RF) transmissions from an RF system of at least one mobile platform operating within a predetermined coverage region to a space-based transponder orbiting within the coverage region, in a manner to maintain a signal-to-noise ratio (Eb/No) of the RF transmissions within a predetermined range, the method comprising the steps of: using a first control loop to monitor, by a central controller, a signal-to-noise ratio of said RF transmissions received by the satellite transponder, and to transmit commands to the mobile platform via the satellite transponder for maintaining the signal-to-noise ratio within a predetermined range and maintaining a power spectral density (PSD) of the RF transmissions within the predetermined limit and of enabling changes to the power level of the RF transmissions from the antenna of the mobile platform to further ensure the PSD of the RF transmissions does not exceed the predetermined limit.

The previous art of record fails to teach of a **second control loop including a mobile system of the mobile platform to monitor and adjust a power level of said RF transmissions to the satellite transponder, inbetween receipt of the commands from the central controller, to thereby maintain the power level of the RF transmissions at a previously commanded level, inbetween receipt of updated command signals from the central controller.**

Regarding claim 21, the previous art of record teaches of a method for managing radio frequency (RF) transmissions (column 2, lines 27-30) from an RF system of at least one mobile platform operating within a predetermined coverage region to a space-based transponder orbiting within the coverage region, in a manner to maintain a signal-to-noise ratio (Eb/No) of the RF transmissions within a predetermined range, the method comprising: using a first control loop to enable a controller to monitor and adjust a power level of the RF transmissions transmitted from an antenna of the mobile platform; the step of monitoring by a central controller comprises monitoring by a ground-based central controller located within the coverage region.

The previous art of record fails to teach of forming **a second control loop between the spaced-based signal relaying device and the mobile platform and the satellite transponder to monitor and maintain the signal-to-noise ratio at a previously commanded level, the second control loop including the steps of: monitoring the signal-to-noise ratio of said RF transmissions between the mobile platform and the satellite transponder; adjusting the power level of the RF transmissions to maintain the power level at the previously commanded level.**

Regarding claim 24, the previous art of record teaches of a method for managing radio frequency (RF) transmissions from an RF system of at least one mobile platform operating within a predetermined coverage region to a space-based transponder orbiting within the coverage region, in a manner to maintain a signal-to-noise ratio (Eb/No) of the RF transmissions within a predetermined range, of using a controller to form a first power level control loop for monitoring a power of signals relayed by the

space-based transponder from the mobile platform; using the controller to generate first power level commands and transmitting the power level commands to the space based transponder for subsequent relay back to the mobile platform.

The previous art of record fails to teach and forming a **second power level control loop between the mobile platform and the space-based transponder, where the mobile platform is able to implement second power level commands to signals transmitted from its RF system independently of the receipt of the first power commands from the controller.**

Regarding claim 27, the previous art of record teaches of a method for managing radio frequency (RF) transmissions from an RF system of at least one mobile platform operating within a predetermined coverage region to a space-based transponder orbiting within the coverage region, in a manner to maintain a signal-to-noise ratio (Eb/No) of the RF transmissions within a predetermined range, using a controller to form a first power control loop for monitoring a power level of the RF transmissions relayed by the space-based transponder from the mobile platform; using the controller to generate first power level commands and transmitting the power level commands to the space based transponder for subsequent relay back to the mobile platform.

The previous art of record fails to teach and forming a **second power level control loop between the mobile platform and the space-based transponder for enabling the mobile platform to monitor a power level of the RF transmission transmitted from the mobile platform**.

Claims 2-5 and 22-23 and 25 depend on claims 1, 21 and 24, respectively; therefore, the same reasons for allowance are given to them as in the independent claims 1, 21 and 24.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gallagher (Gallagher et al., Patent No.: 5,956,619) in view of Dintelmann (Dintelmann et al., US Patent No.: 6,256,496 B1).

Regarding claim 6, Gallagher teaches of a method for managing radio frequency (RF) transmissions (column 2, lines 27-30) from an RF system (column 1 lines 5-10) of at least one mobile platform operating within a predetermined coverage region (column 4, lines 20-23; e.g., "coverage area 22") to a space-based transponder orbiting within the coverage region (column 2, lines 30—35; where mobile stations are mobile platforms), in a manner to maintain a signal-to-noise ratio (Eb/No) of the RF transmissions within a predetermined range (column 7, lines 29-41; where power level is an indicator of the Eb/No; e.g., signal strength derived from Eb/No), the method comprising the steps of: using a first control loop to monitor and adjust a power level of

the RF transmissions from the mobile platform to the space-based transponder to maintain same within the predetermined range (column 2, lines 31-36), the first control loop including the steps of: receiving the RF transmissions relayed from the space-based transponder at a central controller (column 2, lines 51-55; e.g., "determining... a difference value" corresponding to "monitoring"); comparing the determined signal-to-noise ratio with predetermined signal-to-noise values representing the predetermined range (column 2, lines 47-51); and transmitting commands representing changes in the power level from the central controller to the space-based transponder (column 2, lines 51-54) , and from the space-based transponder to the mobile platform (column 2, lines 53-55), to thereby command the mobile platform to adjust a power level of its the RF transmissions, to maintain the signal-to-noise ratio of the RF transmissions from the mobile platform to the space-based transponder, within the predetermined range at the receiver of the space-based transponder (column 2, lines 55-57).

Gallagher does not teach of using the central controller to determine a signal-to-noise ratio of the RF transmissions received by the satellite transponder lines, in real time.

In related art concerning a digital radio communication apparatus and mentod in a VSAT network, Dintelmann teaches of using the central controller to determine a signal-to-noise ratio of the RF transmissions received by the satellite transponder lines (column 3, lines 39-41; e.g., "controller), in real time" (column 5, lines 20-25).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Gallagher's power method with Dintelmann's central

controller functioning in real-time in order to concentrate control in one location and ensure availability of services.

Regarding claim 7, Gallagher further teaches of a second control loop between the mobile platform and the satellite transponder to monitor and maintain the signal-to-noise ratio at a previously commanded level (column 2, lines 30-34), the second control loop including the steps of: monitoring the signal-to-noise ratio of said RF transmissions between the mobile platform and the satellite transponder (column 2, lines 51-55; e.g., "determining... a difference value" corresponding to "monitoring"); adjusting the power level of the RF transmissions to maintain the power level at the previously commanded level (column 2, lines 47-51; where the "desired" power level corresponds to "commanded level"). Dintelmann teaches of receipt of the commands from the central controller (column 3, lines 39-41).

3. Claim 8-13 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dintelmann in view of Chang (Chang et al.; US Patent No.: 6,606,307 B1).

Regarding claims 8, Dintelmann teaches the method comprising the steps of: using a central controller to receive and determine a signal-to-noise ratio of the RF signal transponded from the space-based transponder; assuming that the signal-to-noise ratio of the RF signal received by the central controller is approximately identical to a signal-to-noise ratio of a RF signal at an output of the space-based transponder (column 5, lines 1-6).

Dintelmann does not teach of determining a power spectral density (PSD) of an RF signal from a mobile platform having an RF transmitter/receiver directed at a space-

based transponder, and of determining an effective isotropic radiated power (EIRP) value of an RF signal directed at the receiver of the space-based transponder by the mobile platform as a function of the signal-to-noise ratio of the RF signal received by the central controller, and denoting the EIRP value as a target EIRP; using the target EIRP and a signal pattern of an antenna of the mobile platform to determine an actual EIRP of the RF signal reaching a GEO arc within which the space-based transponder resides column ; and using the actual EIRP reaching the GEO arc to determine the PSD of said RF signal being transmitted by the mobile platform.

In related art concerning techniques for utilization of bandwidth space assets, Chang teaches of determining a power spectral density (PSD) of an RF signal from a mobile platform having an RF transmitter/receiver directed at a space-based transponder (column 1, lines 51-62), and of determining an effective isotropic radiated power (EIRP) value of an RF signal directed at the space-based transponder by the mobile platform as a function of the signal-to-noise ratio of the RF signal received by the central controller (column 3, lines 30-37), and denoting the EIRP value as a target EIRP (column 3, lines 34-37); using the target EIRP and a signal pattern of an antenna of the mobile platform to determine an actual EIRP reaching a GEO arc within which the space-based transponder resides column ; and using the actual EIRP reaching the GEO arc to determine the PSD of said RF signal being transmitted by the mobile platform (column 3, lines 34-37 column 13, lines 58-65).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Dintelmann's method with Chang's power spectral

density determination method in order to allocate the frequencies according to the services requested with improved quality of service.

Regarding claim 9, Chang teaches of a system for monitoring and controlling a power spectral density of an RF signal from a mobile platform having an RF transmitter/receiver directed at a space-based transponder (column 3, lines 38-42), the system comprising: a scan angle compensator system for monitoring a power level of a signal transmitted from the RF transmitter/receiver of the mobile platform (column 1, lines 54-59; where the angle compensator is inherent of the system), where the power level varies due to changes in an attitude of the mobile platform (column 3, lines 38-42; where altitude contributes to the variation of power). Dintelmann teaches of adjusting the power level of the signal transmitted from the RF transmitter to minimize fluctuations of the power level when the signal is received by the space-based transponder (column 4, lines 29-34).

Regarding claim 10, Dintelmann in view of Chang teaches all the limitations of claim 9. Chang further teaches where the system comprises an open loop system which compares antenna pointing information generated by an onboard reference system with information contained in a prestored table, and modifies the power level of the signal in accordance with the information contained in the prestored table (table 1; where reference power information is used for modifications required).

Regarding claim 11, Dintelmann in view of Chang teaches all the limitations of claim 9. Dintelmann further teaches of a ground loop controller for measuring a signal quality of the signal when the signal is received from the satellite transponder at a

ground station, and for generating a power correction command signal that is transmitted back to the mobile platform via the space-based transponder (column 5, lines 5-14 and lines 25-27).

Regarding claim 12, Dintelmann in view of Chang teaches all the limitations of claim 11. Dintelmann further teaches where the ground loop controller comprises a closed loop system (column 3, lines 39-41; e.g., "central station computer (controller)" corresponding to a closed loop system).

Regarding claim 13, Dintelmann in view of Chang teaches all the limitations of claim 12. Dintelmann further teaches where the ground loop controller only transmits the power correction command signals when a signal quality value of the signal differs from a desired predetermined value by a predetermined amount (column 5, lines 27-33; when "needed").

Regarding claim 19, Chang teaches of a system for monitoring and controlling a power spectral density of an RF signal from a mobile platform having an RF transmitter/receiver directed at a space-based signal relaying device; Dintelmann teaches of using the central controller to determine a signal-to-noise ratio of the RF transmissions received by the satellite transponder lines (column 3, lines 39-41; e.g., "controller); Chang further teaches of using the approximate signal-to-noise ratio to extrapolate an effective isotropic radiated power (EIRP) value of an RF signal when the RF signal was radiated from the mobile platform RF determining a power spectral density (PSD) of an RF signal from a mobile platform transmitter/receiver (column 3, lines 34-37) ; and using the EIRP value to estimate the actual EIRP of the RF signal

received by the space-based transponder (column 3, lines 34-37 column 13, lines 58-65).

Regarding claim 20, Dintelmann in view of Chang teaches all the limitations of claim 20. Chang further teaches of using information concernng pointing direction of antenna of the mobile platform radiating the RF signal in estimating the actual EIRP (column 2, lines 12-15; e.g., "multiple data").

4. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dintelmann in view of Chang as applied to claim 13 above, and further in view of Gallangher.

Regarding claim 14, Dintelmann in view of Chang teaches all the limitations of claim 11.

Dintelmann in view of Chang does not teach where the power correction command signal represents an increment value by which the power level of the signal is to be modified.

In related art concerning a satellite controlled power control for personal communication user terminals, Gallangher teaches where the power correction command signal represents an increment value by which the power level of the signal is to be modified (column 2, lines 55-57; where the adjustment includes an increment in the power level).

It would have been obvious to a one of ordinary skill in the art at the time the invention was made to combine Dintelmann's and Chang's system with Gallangher's power increment in order to maintain a desired quality of service.

Regarding claim 15, Chang teaches of a system for monitoring and controlling a power spectral density of an RF signal from a mobile platform having an RF transmitter/receiver directed at a space-based transponder (column 3, lines 38-42), Gallangher teaches of the system comprising: a ground loop controller for measuring a signal quality of the RF signal when the signal is received from the space-based transponder at a ground station (figure 7, item C), and for generating a power correction command signal that is transmitted back to the mobile platform via the space-based transponder, to thereby maintain the power spectral density of the RF signal being transmitted by the mobile platform, as experienced at the geosynchronous arc within which the space-based transponder resides, within a predetermined limit (column 3, lines 34-37, column 13, lines 58-65 and figure 7, item F).

Regarding claim 16, Dintelmann in view of Chang in further view of Gallangher teaches all the limitations of claim 15, Gallangher further teaches where the ground loop controller comprises a closed loop system that compares a signal quality of the signal received at the ground station to a predetermined value and generates the power correction command based on a difference in signal quality between the signal received and the predetermined value (column 6, lines 65-67 and figure 7, item F).

Regarding claim 17, Dintelmann in view of Chang in further view of Gallangher teaches all the limitations of claim 15. Chang teaches of a scan angle compensator system for monitoring a power level of a signal transmitted from the RF transmitter/receiver of the mobile platform (column 1, lines 54-59; where the angle compensator is inherent of the system), where the power level varies due to changes in

an attitude of the mobile platform (column 3, lines 38-42; where altitude contributes to the variation of power). Dintelmann teaches of adjusting the power level of the signal transmitted from the RF transmitter to minimize fluctuations of the power level when the signal is received by the space-based transponder (column 4, lines 29-34).

Regarding claim 18, Dintelmann in view of Chang teaches all the limitations of claim 17. Chang further teaches where the system comprises an open loop system which compares antenna pointing information generated by an onboard reference system with information contained in a prestored table, and modifies the power level of the signal in accordance with the information contained in the prestored table (table 1; where reference power information is used for modifications required).

## *Conclusion*

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angelica Perez whose telephone number is 703-305-8724. The examiner can normally be reached on 7:15 a.m. - 3:55 p.m., Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay Maung can be reached on 703-308-7745. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 2600's customer service number is 703-306-0377.

Angelica Perez
(Examiner)

NAY MAUNG
SUPERVISORY PATENT EXAMINER

Art Unit 2684

February 18, 2005